Claims

1. A metal compound obtained by a process comprising the step of contacting the following components (a) to (c), wherein the amount of the component (b) contacted is from 0.1 to 8 mol, and the amount of the component (c) contacted is from 0.5 to 8 mol, per 1 mol of the component (a), respectively:

(a) a compound represented by the following formula [1]

$$M^1L^1_r \qquad [1],$$

(b) a compound represented by the following formula [2]

$$R^1_{s-1}TH \qquad [2], \text{ and}$$

(c) a compound represented by the following formula [3],

$$R^2_{4-n}J(OH)_n \qquad [3],$$

wherein $M^1$ is a metal atom of the Groups 12 to 15 in th the periodic table or a boron atom; r is a valence of $M^1$; $L^1$ is a hydrogen atom, a halogen atom, a hydrocarbon group or a hydrocarbon oxy group, and when two or more $L^1$'s exist, they may be the same or different from one another; T is a non-metal atom of the Group 15 or 16 in the periodic table; s is a valence of T; $R^1$ is an electron-withdrawing group or an electron-withdrawing group-containing group, and when two or more $R^1$'s exist, they may be the same or different from one another; n is the number of from 2 to 4; J is a non-metal atom of the Group 14 in the periodic table; and $R^2$ is a hydrocarbon

group, and when two or more $R^2$'s exist, they may be the same or different from one another.

2. The metal compound according to Claim 1, wherein T is a nitrogen atom or an oxygen atom.

3. The metal compound according to Claim 1, wherein $R^1$ is a halogenated hydrocarbon group.

4. The metal compound according to Claim 1, wherein the component (b) is a fluorinated phenol.

5. The metal compound according to Claim 1, wherein the component (b) is pentafluorophenol.

6. The metal compound according to Claim 1, wherein the component (b) is a fluorinated alcohol.

7. The metal compound according to Claim 1, wherein the component (b) is 1,1,1,3,3,3-hexafluoro-2-propanol.

8. The metal compound according to Claim 1, wherein $M^1$ is a bismuth atom.

9. The metal compound according to Claim 1, wherein $M^1$ is an aluminum atom.

10. The metal compound according to Claim 1, wherein J is a silicon atom.

11. A catalyst component for addition polymerization comprising the metal compound according to Claim 1.

12. A catalyst for addition polymerization obtained by a process comprising the step of contacting a catalyst component for addition polymerization according to Claim 11 with a compound (B) of a metal selected from the group consisting of metals of Groups 3 to 11 and lanthanide series, and optionally an organoaluminum compound (C).

13. The catalyst for addition polymerization according to Claim 12, wherein the compound (B) is a metallocene compound.

14. The catalyst for addition polymerization according to Claim 12, wherein the compound (B) is a transition metal compound, which contains at least one group having a cyclopentadienyl type anion skeleton.

15. A process for producing an addition polymer comprising the step of polymerizing an addition polymerizable monomer in the presence of the catalyst for addition polymerization according to Claim 12.

16. The process for producing an addition polymer according to Claim 15, wherein the addition polymerizable monomer is an olefin.

17. The process for producing an addition polymer according to Claim 15, wherein the addition polymerizable monomer is a combination of ethylene and an $\alpha$-olefin.